

## Moon Phases Activity...To the teacher

National Standards application:

### Science as Inquiry

CONTENT STANDARD A:

- Identify concepts that guide scientific investigations.
- Conduct scientific investigations.
- Use technology to improve investigations.
- Formulate and revise models using logic and evidence.

This activity does a great job in depicting the relationship of the Sun, Moon and Earth in creating the various phases of the Moon observed from earth.

For the Sun (on the left of the diagram) I use a slide projector to cast a white light beam onto the Moon (which is a volley ball placed on a coffee can pedestal on top of a stool to maintain the same height as the projector beam.) The distance from the “Sun” to the “Moon” is about 10 feet.

While standing at each of the “clock” positions, the student makes a sketch of the appearance of the volleyball moon, depicting lighted and shadowed areas accurately.

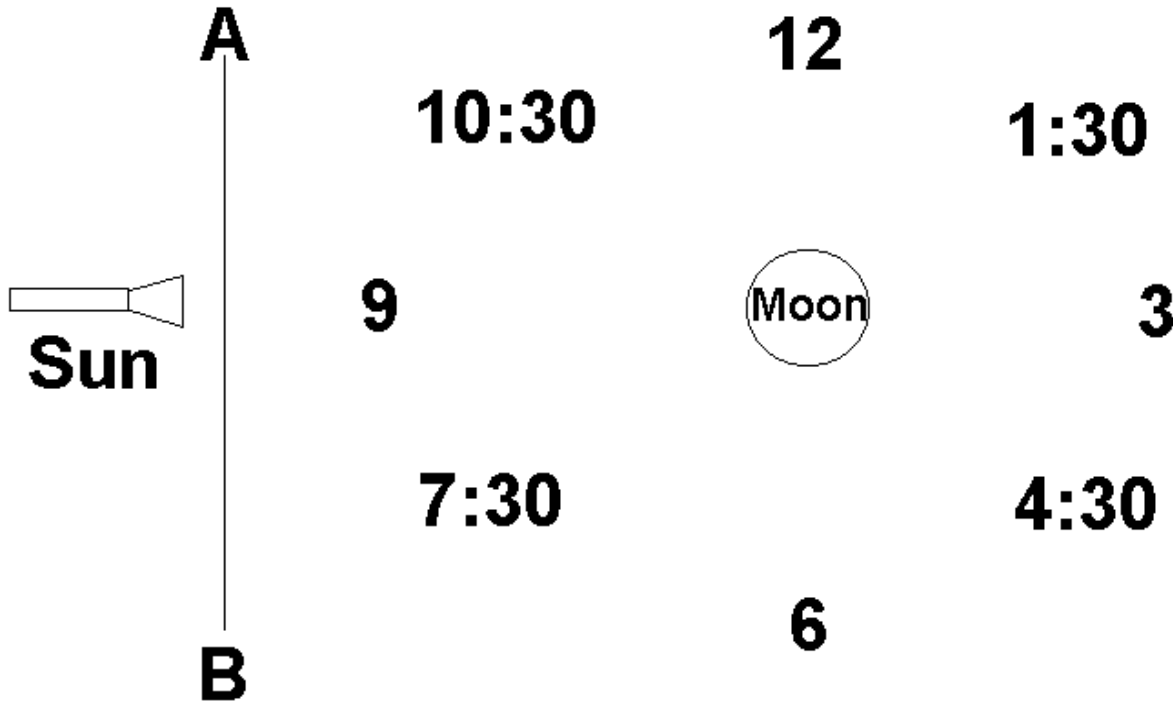
Using a Moon Phases diagram found in nearly any astronomy text or on the web at <http://www.enchantedlearning.com/subjects/astronomy/moon/Phases.shtml> the students can then label the Moon phase for each of their eight diagrams.

After reviewing this activity’s results with your class, challenge them with the “Moon Phases Activity Follow-Up.”

Answer key:

• 3:00 = new moon
• 1:30 = waxing crescent
• 12:00 = 1 <sup>st</sup> quarter
• 10:30 = waxing gibbous
• 9:00 = full moon
• 7:30 = waning gibbous
• 6:00 = 3 <sup>rd</sup> quarter
• 4:30 = waning crescent

## Moon Phases Activity




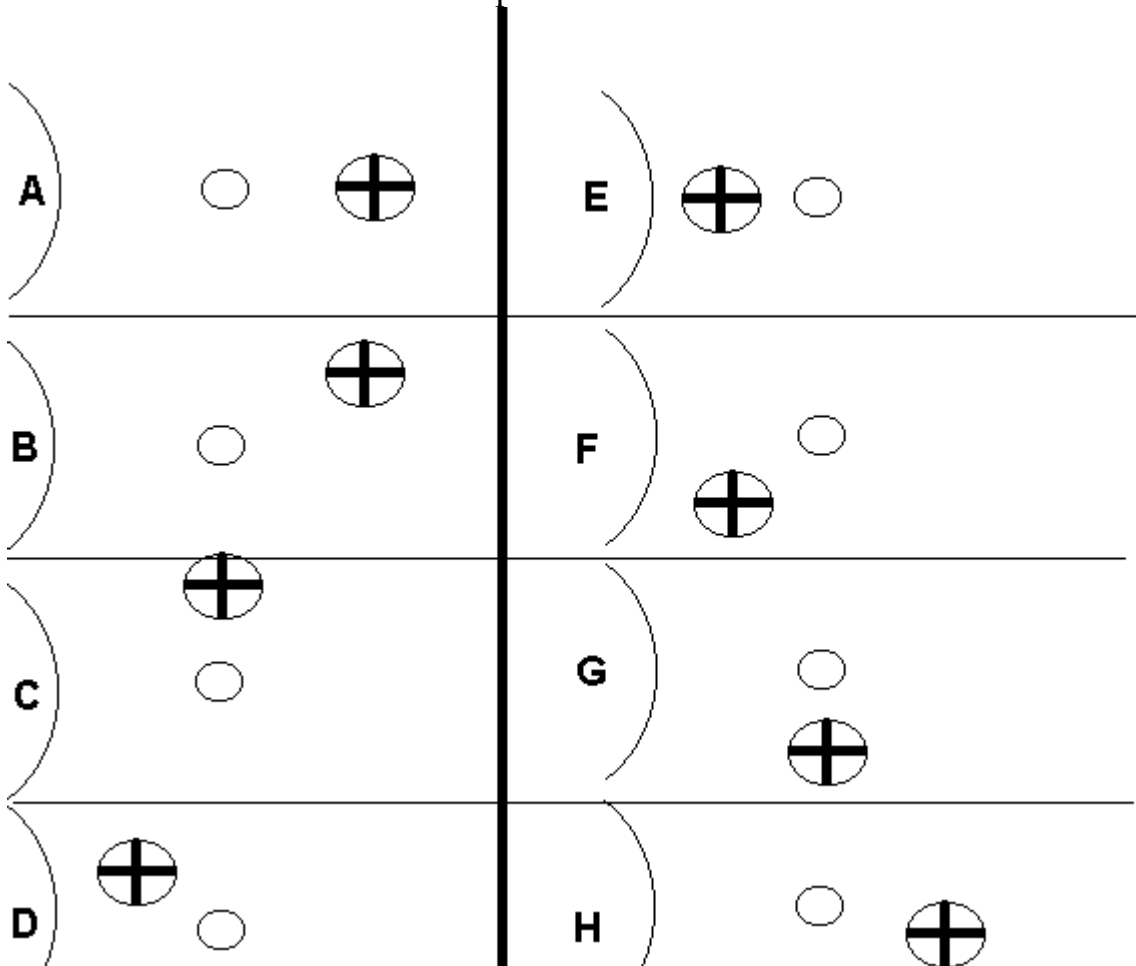
### Overhead view

1. Assume that the “sunlight” always enters the Earth-Moon system at an angle perpendicular to line AB. (After all, it IS 150,000,000 km away!)
2. Standing at each of the above-labeled clock positions, sketch the illuminated appearance of the moon---eight diagrams in all. (Note: Do not stand **DIRECTLY** in front of the light when in the 9 o’clock position, or you will produce a “lunar eclipse!”)

## Moon Phases Activity Follow-up Mr. Mathras...Space Science

**Make no marks on this paper.**

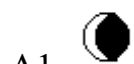
**Directions:** The lettered objects in each diagram below represent the Sun; the plain circles are the Moon and the  icons represent the Earth.



Letter you answer sheet A-H and for each situation above, perform the following:

1. Sketch a diagram depicting how the moon would appear from Earth.
2. Tell in what phase the moon would be.
3. If you were an astronaut standing on the moon, make diagram of how the Earth would appear.
4. Tell in what phase the Earth would be.

Sample Response: (BUT not CORRECT!) ☺



A2. waning crescent



A4. 1<sup>st</sup> quarter

## Moon Phases Quiz:

Mr. Mathras

**Make no marks on this paper.**

For each of the diagrams below, **identify the exact phase** of each and then **order** the phases in sequence beginning with the new moon as #1.



**A**

**Phase:**  
**Order:**



**B**

**Phase:**  
**Order:**



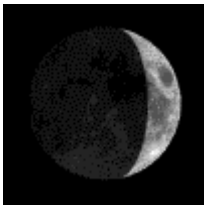
**C**

**Phase:**  
**Order:**



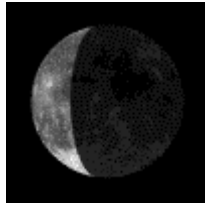
**D**

**Phase:**  
**Order:**



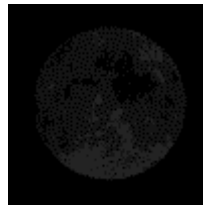
**E**

**Phase:**  
**Order:**



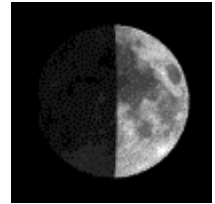
**F**

**Phase:**  
**Order:**



**G**

**Phase:**  
**Order:**



**H**

**Phase:**  
**Order:**